The University of Texas at Austin

Fall Protection Plan

OFFICE OF THE VICE PRESIDENT FOR

UNIVERSITY OPERATIONS

Environmental
Health & Safety

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This Plan was developed by Environmental Health and Safety (EHS) in collaboration with the following departments: Utilities and Energy Management, Facilities Services, Facilities Operations and Maintenance Services, Project Management and Construction Services, Office of the Dean of Students, Information Technology Services, University of Texas Police Department, Texas Performing Arts, Division of Housing and Food Services, and McDonald Observatory.

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John Salsman, Director of Environmental Health & Safety — Date

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1.0 PURPOSE AND SCOPE

The purpose of the University Fall Protection Plan, herein referred to as the Plan is to ensure that University employees and students who perform activities at heights have the knowledge and tools to work safely. This program applies to elevated work surfaces at 6 feet or greater above the lower level. Protection must be provided for all personnel, be they student or staff, who are exposed to potential hazards at heights.

This applies to students, faculty, and staff at UT Austin facilities. Contractors are expected to follow American National Standards Institute (ANSI) and/or Occupational Safety and Health Administration (OSHA) guidelines and to not create a hazard for the UT Community who may be below the contractor's work area. Extension and a-frame ladders are not subject to this program. Fall protection must be provided whenever the length of a fixed ladder equals or exceeds 24 feet. This Plan does not include stairwell guardrails or handrails. This Plan does not apply to Landscape Services' arborists who are performing tree climbing with rope and saddle. They must comply with the arborist tree-specific plan. Arborists must comply with the University Fall Protection Plan when performing work at heights, when not in trees.

1.1 Unprotected Sides and Edges

An unprotected edge, also called a leading edge, is any wall or parapet that is less than 39 inches or a wall opening that is at least 30 inches high and at least 18 inches wide. Leading edges, for the purposes of the University, occur at 6 or more feet above a lower level. No one should access areas where leading edges exist without the authorization, training, and proper personal protective equipment to do so safely.

2.0 ROLES AND RESPONSIBILITIES

2.1 Environmental Health and Safety

Environmental Health & Safety (EHS), along with Departmental Safety Professionals, have overall responsibility for the program administration including the training, evaluation, inspections, and audits. EHS conducts periodic audits of the workplace to ensure that this program is being effectively implemented. EHS has final authority over all safety issues and may halt operations or practices it considers an imminent danger at any time.

2.2 Departments

Each affected department is responsible for identifying potential fall hazards and activities which may result in a fall in their workplace, maintaining their personal fall protection equipment (such as lanyards and harnesses) and components, and correcting any deficiencies noted with fall protection devices or their components.

Departments will:

- Ensure that the operation and maintenance manuals of personal fall protection equipment and components are made available to each user.
- Conduct hands-on training.

- Identify all fall hazards and activities in their workplace and implement preventative measures for these hazards.
- Resolve any safety issues that arise, during inspections or audits.
- Provide all users with the necessary training, tools, and equipment to perform work at heights safely.
- Ensure the personal fall arrest or restraint systems they own or borrow, are maintained in accordance with the manufacturer's specifications.
- May appoint an individual or individuals as a designated Department Safety Contact or Department Safety Professional as defined in Appendix A, who will be the point of contact with EHS and employees concerning fall protection safety. This person must be a full time employee of the University.

2.3 Department Safety Contacts

Department Safety Contact is responsible for enforcing all University policies and practices and will:

- Have the authority to halt work at heights any time unsafe operations or conditions exist to either the participants or personnel below the affected area.
- Understand hazards specific to their areas and communicate these to potentially affected individuals.
- Ensure modifications are not made to anchorage component systems or personal fall protection systems without manufacturer's prior approval.
- Ensure that personnel attend and complete all required training.
- Retain completed inspections reports of personal fall protection equipment, such as harnesses and lanyards, for a minimum of three years.

2.4 Supervisors

- Ensure that personnel are trained and appropriately use all fall protection equipment as needed.
- Address any unsafe or hazardous conditions.
- Ensure that inspection of fall protection equipment in their area occurs in the timeframe specified in this document.
- Ensure that inspection records are maintained for fall protection equipment for their area.
- Immediately take out of service any defective or damaged equipment. Ensure that equipment is either serviced or replaced.
- Notify EHS if a fall occurs.
- Ensure that prompt rescue, typically this is thirty minutes or less, of employees and students can occur by calling emergency services. Some remote locations may not have timely access to emergency services, so it may be necessary to purchase self-rescue equipment or train personnel to perform rescue.

2.5 Employees and Students

Employees and students are responsible for complying with all applicable rules and regulations, wearing all required personal protective equipment (PPE), and completing both the University online Fall Protection Training, and the hands-on required training.

- Maintain all PPE required to work safely at heights.
- Ensure that while working at heights, hazards are not created for personnel below.
- Inspect all the components of fall protection systems and personal fall protection equipment prior to use.
- Complete the University online training, hands-on training, and review manufacturer's specifications every two years.
- Adhere to manufacturer specifications for the safe operation of all equipment.
- Report any defective building structures such as anchor points or guardrails to Facilities Operations Maintenance (FOM).
- Immediately report damaged or defective personal fall arrest or restraint systems components to the supervisor or Department Safety Contact or Department Safety Professional.
- Report any unsafe or hazardous conditions to their supervisor.
- Report all falls immediately to their supervisor.

3.0 Fall Prevention

It is always preferable to engineer out the hazard, e.g. the use of guardrails, designing walls with a height of at least 42 inches, plus or minus 3 inches, or ensuring maintenance activities can be performed inside the building and not on the roof edge. In the event that engineering controls cannot be implemented, the use of active fall protection systems must be used.

Passive fall protection systems, such as guardrails, are always preferred over active fall protection systems. Active fall protection systems require personnel to be actively engaged in the system. They wear a personal fall protection device, such as a full body harness. If any components of an active fall protection system fail, the user could come in direct contact with the hazard, which may result in injury or death.

3.1 Engineering Controls

Engineering controls are designed to eliminate hazards and are the preferred method for protecting from or controlling exposure to fall hazards. Examples of engineering controls used to eliminate or reduce exposure are listed below:

- Changing equipment or processes to control the hazard (e.g. designing equipment to be maintained, operated, or inspected from the ground level).

3.2 Administrative Controls

Administrative controls serve to reduce a hazard by changing work practices or procedures. Examples of administrative controls used to reduce exposure are listed below:

- Restricting access
- Housekeeping
- Signage

3.3 Passive Fall Protection Systems

Passive fall protection systems do not require operational involvement from the user in order to be protected while performing work at heights. Examples of passive systems are listed below:

- Installation of guardrail systems
- Construction of parapet walls meeting the height criteria for guardrails

Whenever possible guardrails, aerial lifts, and platforms should be installed/used in lieu of active fall protection systems.

Personal fall arrest or restraint systems shall not be attached to guardrail systems, unless they have been certified as permitted by a qualified person.

3.3.1 Guardrails and Parapets

The top edge height of the top rails, or equivalent guardrail system members, shall be 42 inches plus or minus 3 inches above the walking/working level. When conditions warrant, the height of the top edge may exceed the 45 inches, provided the guardrail system meets all other criteria.

Mid-rails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall of at least 21 inches high. Mid-rails shall be installed at a height midway between the top edge of the guardrail system and the walking/working level. (Example: If the top edge of the guardrail is 42 inches, then the mid-rail must be 21 inches.). If employees or students perform an action, such as working on a planter, that puts them above the roof surface and reduces the protection of the top rail of the guardrail or parapet, additional fall protection measures must be employed.

3.3.2 Skylights

Each employee and student on a walking/working surface shall be protected from objects falling through holes (including skylights) by placing covers over the holes. Unless the skylight has been designed to be walked on, every skylight shall be guarded by a standard skylight screen or a fixed standard guardrails on all exposed sides or personnel must use personal fall protection when working around them.

4.0 Active Fall Protection Systems

Active fall protection systems require that employees and students understand when they are exposed to fall hazards and have a working knowledge of the fall protection system available for their protection. Active systems begin with a certified anchorage point and have components connected to the worker (body harness, lanyard, self-retracting lifeline, rope grab, etc). Proper training in the use of active systems is essential for an effective fall protection system.

4.1 Personal Fall Protection Systems

Personal protective equipment shall be used to minimize fall hazards where engineering or administrative controls do not eliminate the hazard or in conjunction with either engineering or

administrative controls. Before using personal fall protection systems, the employee/supervisor must assess the potential fall area and select a system that will prevent the user from contacting the ground or other objects, such as the side of a building. Personal fall protection systems are comprised of several components: anchorage point, lanyard, and full body harness. They may also include a deceleration device and a positioning belt.

All fall protection equipment shall meet or exceed appropriate ANSI standards. UT personnel shall use only commercially manufactured equipment specifically designed for fall protection and certified by a nationally recognized testing laboratory. All fall protection equipment must bear the marking of the manufacturer and approvals for specified use. The design capacity includes the user's full weight plus the weight of any tools and materials that are carried and could be part of the load for fall protection equipment during a fall.

4.2 Anchorage

Anchorages used for personal fall protection systems shall be independent of any anchorage being used to support or suspend platforms. There are two types of anchorage points: non-certified and certified. Non-certified anchor points must be capable of supporting 5,000 pounds static per user for fall arrest, 3,000 lbs for work positioning & rescue, and 1,000 lbs for fall restraint. These are under the supervision of a competent person. A competent person can identify existing fall hazards and has the authority to take prompt corrective measures to eliminate these hazards. Examples of non-certified anchorage points are: beams, girders, columns, other building steel, or designated anchor points.

Certified anchorage points must be cable of withstanding two times the foreseeable force for fall arrest, restraint, and work positioning. Certified anchor points must be capable of withstanding five times the applied load for rescue. All certified anchor points must be certified by a qualified person. A qualified person is someone with a recognized degree or professional certificate, an engineer typically structural or mechanical, and extensive knowledge and experience capable of designing, analyzing, and evaluating fall protection system specifications. Qualified persons may also work under the supervision of an engineer.

Anchor points should, generally be directly above the user's head, and used as part of a complete fall arrest system. Anchor points in aerial lifts are typically located in the cage, which is below the user's head. Personal fall arrest systems shall not be attached to guardrail systems, unless they have been certified as permitted by a qualified person. Tying off around rough or sharp edges should be avoided.

4.3 Body Wear

The full body harness is a piece of personal protective equipment used to protect the wearer from injuries resulting from a fall. A full body harness is comprised of straps which may be secured about the user in a manner that will distribute the fall arrest forces over the thighs, shoulders, chest, and pelvis. It has a way to attach it to the other components of a personal fall protection system. Only full-body harnesses shall be used. Select the harness based on the activities that it will be used for. The use of a body belt is prohibited for fall protection. The attachment point for full body harnesses is usually located in the center of the user's back, around shoulder level.

Body belts may only be used as part of a positioning system to allow hands-free work environment. Positioning devices shall be secured to an anchorage point capable of supporting at least twice the potential impact load of the user's fall or 3,000 lbs, whichever is greater. All personnel that employ body belts must use them in conjunction with a full body harness. Where a positioning device is used, it shall comply with the following:

- A body belt must be worn in conjunction with a full body harness.
- Body belts shall be at least one and five-eighths (1 5/8) inches wide.
- Positioning devices shall be rigged such that a free fall cannot be more than 2 feet.

4.4 Personal Fall Arrest Systems

Most personal fall arrest systems are designed to protect a combined person and tool weight of less than 310 lbs. Check with manufacturer specifications. System weight limits must not be exceeded without written permission from a Texas licensed structural engineer or the manufacturer of that system.

- A personal fall arrest system shall limit the maximum arresting forces to 1,800 pounds with a full body harness.
- The typical length of a fall arrest lanyard is 6 feet, provided that the user will not contact objects or a lower level.
- The typical deceleration distance, or distance it takes to bring a user, to a complete stop, is 3.5 feet.
- Personal fall arrest systems shall have sufficient strength to withstand twice the potential impact energy of the falling user.
- Have sufficient strength to withstand twice the potential impact energy of a user free falling a distance of 6 feet, or the free fall distance permitted by the system, whichever is less.
- Limit free fall to 2 feet or less.
- Lifelines shall be protected against cutting and abrasion.

4.5 Size and Harness Selection

Departments are required to have harnesses sized for all individuals who are required to wear them. This may mean having a variety of harness sizes. When the harness is adjusted the wearer should be able to get only two fingers underneath the leg strap. Wearing improperly sized or adjusted harnesses could result in serious injury or even death.

Departments shall assess conditions to ensure that appropriate fall protection equipment is selected based on the work place and activity. At a minimum, assessments should identify the presence of the following, prior to selecting personal fall protection equipment:

- Hot objects, sparks, flames, or heat producing operations
- Sharp objects or abrasive surfaces
- Moving equipment
- Electrical hazards
- Chemicals used either by the wearer or near the wearer
- Anything else that could affect the strength or integrity of personal fall protection devices or components

Harnesses are made of a variety of materials based on their function. As an example welders should use a welder's harness that is made of flame-retardant material. Painters should wear a harness that is made of material resistant to grease, oil, and paint.

4.6 Restraint Systems

A restraint lanyard is a device, is attached between the user and an anchorage point to prevent the user from walking or falling off an elevated surface. It does not support a person at an elevated surface, it prevents them from leaving the elevated surface or work position. Restraint systems are not designed for fall arrest. Restraint systems should be used when an arrest would create the hazard of the user hitting an object during the deceleration. An example of this is using a fall arrest system on a roof edge. If the user falls from the edge they will hit the side of the building. In this example, fall restraint – not arrest – is the fall protection system that should be used. When selecting fall restraint ensure that the lanyard meets the following:

- It should only be long enough to get to the edge of the walking surface and not over it;
- It can withstand a force of 3,000 lbs applied to the device when the lifeline or lanyard is fully extended; and
- It does not have a deceleration device on it.

All components of personal fall arrest/restraint systems must be appropriate for the work place conditions and environment.

4.6.1 Fall Arrest Lanyards and Lifelines

Fall arrest lanyards and lifelines shall have a minimum breaking strength of 5,000 pounds. Lanyards shall not exceed six feet in length. Lanyards used on aerial lift devices should not exceed 4 feet in length to reduce the possibility of leaving the safety of the basket.

4.6.2 Ropes and Straps (webbing)

Ropes and straps used in lanyards, lifelines, and strength components of body harnesses shall be made from synthetic fibers.

4.6.3 Connecting Assemblies

Connecting assemblies shall have a minimum tensile strength of 5,000 pounds. Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.

4.6.4 Tie Off Adapter

Tie off adapters must provide a secure point of attachment for a complete personal fall arrest system, and must be capable of supporting a load of 5,000 lbs.

4.6.5 Self-Retracting Lifelines and Lanyards

Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device

with the lifeline or lanyard in the fully extended position. Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 5,000 pounds. Rip-stitch lanyards, tearing, and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds when applied to the device while the lifeline or lanyard in the fully extended position.

4.6.6 Horizontal Lifelines

Horizontal lifelines shall be designed, installed, and used under the supervision of a qualified person as part of a complete personal fall protection system that maintains a safety factor of at least two. On suspended scaffolds or similar work platforms with horizontal lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline. In this instance, each user shall be attached to a separate lifeline.

4.6.7 Vertical Lifelines

Vertical lifelines shall have a minimum breaking strength of 5,000 pounds and shall be protected against being cut or abraded. Each user shall be attached to a separate lifeline when vertical lifelines are used.

4.6.8 D-rings and Snap Hooks

D-rings and snap hooks shall have a minimum tensile strength of 5,000 points. D-rings and snap hooks shall be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or being permanently deformed.

Unless the snap hook is a locking type and designed for the following connections, snap hooks shall not be engaged:

- Directly to webbing, rope or wire rope;
- To each other;
- To a D-ring to which another snap hook or other connector is attached;
- To a horizontal lifeline;
- To any object which is incompatibly shaped or dimensioned in relation to the snap hook such that unintentional disengagement could occur by the connected object depressing the snap hook keeper and releasing itself; or
- On suspended scaffolds or similar work platforms with horizontal lifelines that may become vertical lifelines.

To prevent unintentional disengagement, snap hooks shall be sized to be compatible with the member to which they are connected and shall have the locking-type closure. This is to prevent unintentional disengagement of the snap hook. The devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline. Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials.

4.6.9 Warning Lines

Warning lines all consist of ropes, wires, or chains, and supporting stanchions erected as follows: the rope, wire, or chain shall be flagged at not more than 6-foot intervals with high visibility material and no more than 15 feet from a leading edge:

The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches) from the walking/working surface and its highest point is no more than 39 inches from the walking/working surface;

5.0 Prohibited Conditions

1. Using or providing damaged or defective equipment.
2. Use of a body belt for anything other than a positioning device.
3. Improper dimensions of the D-ring, rebar, or other connection point in relation to the snap hook keeper to be depressed by a turning motion of the snap hook.
4. Using equipment for activities other than its intended, specified purpose.
5. Putting a load on any component that is greater than it has been rated for.
6. Not notifying supervisors of activation through a fall of anchor points, lanyards, harnesses or any component of fall protection device or system.
7. Warning lines on steep slope surfaces exceeding a 4/12 roof pitch (must use personal fall protection equipment instead).
8. Tying off to an anchorage below the dorsal D-ring, unless when using an aerial lift platform that places the anchorage below the dorsal D-ring.
9. Attaching personal fall protection systems to guardrails or hoists that have not been certified by a qualified person.
10. Tying a knot in lanyards, lifelines or anchorage connectors. The use of knots decreases the efficacy of the load rating.
11. Tying off to fire protection piping, conduit, ductwork piping or other structures that are not intended nor designed for fall protection and haven't been approved for such application by a qualified person *They are not designed to withstand the load required for anchorage systems.*
12. Tying around "H" or "I" beams unless a webbing lanyard or wire core lifeline, or other equivalent connector is used (beam-straps or cross arm straps). *Avoid tying off around rough or sharp edges.*

6.0 Inspection

Active fall protection equipment including anchor points, lifelines, lanyards, full body harnesses, snap hooks, and connectors shall be inspected **before** each use by the user. At a minimum, users shall comply with manufacturer instructions regarding inspection. Departments will retain instructions, manuals, and inspection information for all equipment they possess and make them readily available to all users.

Defective equipment shall be taken out of service and rendered not useable. The following should be noted on the inspection prior to each use:

- Examine webbing for cuts, tears, holes, mildew, enlarged eyeholes, and any other signs of wear that may affect the integrity of the equipment.
- Examine the stitching for damage or signs of weakening.
- Examine all metal hardware for cracks, fractures, deformation, loosening of anchorage, or other signs of wear or deterioration which may affect the equipment or its ability to fasten/close.

- Examine lifelines and lanyards for fraying, broken strands, cuts, abrasions, chemical damage, discoloration, or deterioration that may affect the effectiveness of the equipment.
- Examine anchor points to ensure it has not become unseated, that there no cracks, deformities, or other damage.

Any personal fall protection equipment that is damaged or shows signs of being altered must be placed out of service until a competent or qualified person or the manufacturer verifies that it is in good working order.

If a user is involved in an incident where a fall from an elevated work surface occurs, the fall protection equipment **must be inspected** by a competent person to determine if it is suitable for reuse or must be discarded. Contact Facilities Service Center by calling 512-471-2020 to have the anchor point inspected and certified.

6.1 Annual Inspection

Personal fall protection systems must be inspected at least once a year, or as often as directed by the manufacturer, by a properly trained employee, as defined as either by successfully completing an approved competent person course or successfully completing EHS' train the trainer course. Annual inspections should address all components of a fall protection system including, but not limited to, lifelines, structural components, and personal protective equipment. Follow all manufacturers' recommendations or instructions when performing annual inspections. Be sure the equipment meets all manufacturers' specifications. Any deficiencies identified during the inspection or certification process must be addressed before the fall protection system is used. Additional inspection may be required by the equipment manufacturer. A designated competent person shall inspect full body harnesses, shock absorbing lanyards, anchorage connector straps, and lifelines for the following annually:

- Absence or illegibility of marking;
- Absence of any elements affecting the equipment form, fit, or function;
- Evidence of defects in or damage to hardware elements, including cracks, sharp edges, deformation, corrosion, alteration, excessive wear, and any other defects;
- Evidence of defects in or damage to straps or ropes including fraying, un-splicing, kinking, knotting, broken or pulled stitches, excessive elongation, excessive soiling, abrasion, alteration, mildew, excessive wear, or aging;
- Alteration or the absence of parts or evidence of defects in, damage to, or improper function of mechanical devices and connectors;
- Metal hardware for breaks, cracks, fractures, loose anchorage, or other signs of wear or deterioration which might affect the strength of the equipment or the action of the fastening devices; and
- Stitching for breaks, ragged strands, loose or rotted threads, and for other signs of weakening;
- Any other condition that calls in to question the suitability of the equipment for its intended purpose.

The annual equipment inspection must be documented on an inspection form, see Appendix M. When inspection reveals defects in, damage to, or inadequate maintenance of equipment, the equipment shall be permanently removed from service and destroyed. The annual inspection must include all the elements of the daily or prior-to-use inspection, if applicable.

Retractable lifelines shall be sent to the manufacturer for inspection at intervals as required by the specific manufacturer of the equipment.

6.2 Inspection of Guardrails & Railings

Prior to using a guardrail as passive fall protection the user will perform a visual inspection. The visual inspection will note deformation or wear that could reduce the guardrails designed capacity or effectiveness. If the visual inspection notes potential problems, the user should immediately stop and notify Facilities Services, by calling 512-471-2020, who will be responsible for evaluation of the issue and repairs, if needed. An example of some common issues with guardrails are:

- Loose connections, components, deformation, cracks, or damage.
- Corrosion.
- Gates at ladders and similar unprotected edges should operate smoothly with one hand. Spring closures should be able to fully close and secure the gates.
- Regular guardrails and removable railings should not show excessive play at the connections. Pins and removable components should be in place. Removable components like pins should be tethered to the railing or socket to prevent them from being lost.

6.3 Inspection of Anchor Points by Qualified Person

Anchor points must be load tested upon installation. Anchorage - points must be inspected by a qualified person after a fall, following any major alteration to existing equipment, or annually if they are in a corrosive environment, as defined in Appendix A. Load testing is required initially when design documents are not available. Follow all manufacturers' recommendations for care and inspection.

Anchor points that are used on a regular basis as determined by the departments that use them will be inspected by Facilities Services' designated vendor will inspect them every two years in a typical environment and every year in a corrosive environment. The vendor will be a qualified person.

All users should perform a visual inspection prior to clipping in and should look for the following items:

- Verify with Facilities Services or supervisor that anchor is in good working order. If anchor does not have EQID or is tagged out contact Facilities Services to have inspection performed.
- If the anchor point has become unseated or moved
- If the anchor point shows signs of wear or corrosion
- If the area around the anchor point has cracks, deformation, or other signs of damage

Should any of the above conditions be noted, Notify Facilities Service Center 512-471-2020 and provide equipment ID number so that the anchor point can be tagged. It must not be used until it can be tested by a qualified person. If the anchor point is removed from service the tag must state the name of the individual and contact number who tagged it.

Anchor points that are tagged out must not be used until Facilities Services' designated vendor performs an inspection and verifies that it is in good working condition and safe to use.

7.0 Care & Storage of Equipment

Refer to the manufacturer's instructions for the care and storage of all personal fall protection equipment. These instructions must be made available to users of fall protection equipment. Equipment in need of maintenance or repair must be tagged 'Out of Service' or with similar phrasing and removed from service. Equipment that is damaged or in need of repair should be separated from equipment in good working order.

In general, fabric webbing harnesses, lanyards, and anchorage connecting straps can be washed using a mild detergent, then rinsed, and dried.

- Fall protection equipment should be stored in a clean, dry area at normal temperature so as not be damaged by environmental factors such as heat, light, excessive moisture, temperature extremes, and other degrading elements.
- Keep in clean dry areas and away from direct sunlight, which can degrade the synthetic webbing.
- Harnesses should be hung up, when feasible, by their D-rings.
- Fall protection equipment must be kept away from solvents, acids, corrosives, oils, or any materials that could damage or degrade them.
- Ensure fall protection equipment is kept away from sharp objects or conditions such as hot surfaces, sparks, or flames that could damage it. Take fall protection equipment out of service if burn marks or stiffening of material is noted.
- Equipment should be dried thoroughly before to putting away.

8.0 Rescue

Before the use of any personal fall protection equipment, an assessment of the area must be made. A key piece of this assessment includes the rescue plan. Rescue plans must include the following:

- An attendant or coworker who remains in contact with the person using personal fall protection, this can be visual contact, by radio, etc.
- The attendant must be able to immediately contact rescue personnel. In the City of Austin this can be accomplished by calling 9-1-1. No work shall be performed where it is not possible to identify an emergency and summon and promptly ensure rescue can occur.

In some cases, such as the theatrical arts, if the student or employee who has fallen can be reached safely using an aerial lift, then rescue can be performed by placing the lift underneath the fallen individual. The suspended individual must not be detached from their lanyard until they are completely inside the lift.

McDonald Observatory is a remote location and rescue by local emergency services may not be available in time to prevent the employee from sustaining injury or death due to suspension trauma. McDonald Observatory staff may perform rescue, provided they have been properly trained and can do so safely. On some occasions, it may become necessary for personnel to

work alone at heights. If their duties require the use of active fall protection equipment and they are working alone, a formal rescue plan must be created before commencing work. Review Appendix H to assist in ensuring that prompt rescue can occur. Students are not allowed to work alone on roofs. To determine what is meant by 'student' see Appendix A for the definition.

For departments who have employees who have to work alone at heights, the departments must have a system in place to periodically communicate with these employees to ensure their safety while working at heights.

8.1 Suspension Trauma

Suspension trauma also known as harness hang syndrome (HHS), or orthostatic intolerance may be experienced by users using fall arrest systems. Following a fall, a user may remain suspended in a harness. The sustained immobility may lead to a state of unconsciousness. Depending on the length of time the suspended user is unconscious/immobile and the level of venous pooling, the resulting orthostatic intolerance may lead to death.

According to the Journal of Emergency Medical Services, critical circulatory collapse is one of the injuries that can occur with suspension trauma in as little as 30 minutes. The time it takes for suspension trauma to occur is largely contingent on the individual's physical condition.

One of the ways to slow the progression of suspension trauma is to stand up. Under normal circumstances, when a user is standing, the leg muscles must contract to provide support and maintain balance, which puts pressure on the veins. Too often, a user is saved by their personal fall arrest system, only to succumb to suspension trauma while waiting for rescue. Everyone who works at heights should be fully trained in fall prevention and protection procedures. Adding suspension trauma relief straps to harnesses can make a difference. After a fall event, the user can deploy the suspension trauma relief straps - creating a loop that the user can put their feet into and press against to simulate standing up. This allows the leg muscles to contract and can relieve pressure from the leg straps to help improve circulation.

9.0 Roof Safety

Personal fall protection or engineering controls must be used when going within 15 feet from a leading edge. Any deviation from this requires written authorization in accordance with the Rules for Working Safely on a Roof found in Appendix K.

Students and the members of the general public are forbidden from accessing roofs with a leading edge or a guardrail or wall less than 39 inches without prior written approval from the EHS. Roof safety access and rules can be found in Appendices J and K, respectively.

10.0 Aerial Lifts

Some aerial lifts require fall protection. Refer to the manufacturer's specifications. When students, staff, or faculty have to leave the safety of the lift, fall protection is required, more details can be found in the University Lift Safety Program**:**

http://www.utexas.edu/safety/ehs/occupational/lift_safety.html.

11.0 Working at Heights- Pedestrian Protection

Whenever work at heights must be performed, hazards from falling objects must be controlled. This can be accomplished in a variety of ways:

- Using toe boards for scaffolding
- Wearing tool belts or securing tools
- Barricading the area below to protect pedestrians from falling objects

Toe boards should be used whenever overhead work may present the possibility for tools to be kicked over the side. Toe boards shall be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toe board.

12.0 Ladders

Review Ladder Safety http://www.utexas.edu/safety/ehs/news/ladder_safety.pdf for portable ladder safety. Fall protection must be provided whenever the length of a fixed ladder equals or exceeds 24 feet.

13.0 Confined Space

A harness with tripod retrieval system may be used to enter/exit or for rescue in a confined space. Some confined spaces are very narrow and the use of normal fall protection such as a harness and lanyard may create a hazard by causing the entrant to become entangled or stuck on equipment or the interior structure of the confined space. In this case, fall protection may be deemed as infeasible, in which case, wristlets, also referred to as wrist harness, may be used for the purpose of rescue.

14.0 Training

No student, staff, or faculty shall work at heights without the proper training. All student, staff, or faculty who work at heights must successfully complete both the online training and hands-on site specific training initially and every two years thereafter. The hands-on site specific training will be given by the Departmental Safety Professional or their designee. Departments may choose to use a qualified third party vendor to conduct their hands-on site specific training. The hands-on site specific training must include as a minimum the topics in Appendix E.

14.1 Retraining

When EHS, Departmental Safety Professional, Departmental Safety Contact, or the supervisor has reason to believe that any employee or student, who has already been trained, does not have the sufficient understanding and skills, retraining will occur.

Circumstances where retraining is required include, but are not limited to, situations where:

- An incident in the workplace has occurred that is associated with fall protection.
- Changes in the workplace render previous training obsolete.
- Changes in the types of fall protection systems or equipment to be used render previous training obsolete.

- Inadequacies in an affected user's knowledge or use of fall protection systems or equipment indicate that the user has not retained the requisite understanding or skill.

15.0 Record Retention

Manufacturer's instructions, inspection, and maintenance records must be kept for as long as the equipment is in use. This includes qualification records for the design and installation for anchorage points and systems. The annual inspection records for personal fall protection and anchorage systems must be kept a minimum of 3 years. Training records for all users must be kept at a minimum of 3 years.

16.0 Program Evaluation

EHS may perform departmental audits at any time. The University Fall Protection Program will be evaluated by EHS at a period not to exceed five years. Additionally, the program and departments will be evaluated when deficiencies are noted, after incidents involving injuries, or near misses occur. In the event of a fall, an incident investigation will be conducted by EHS in conjunction with Departmental Safety Professional in a timely manner. If an incident occurs at a satellite location, such as McDonald Observatory or the Marine Science Institute, and it is determined to be infeasible for EHS to conduct the on-site investigation in a timely manner, then site staff will work in conjunction with EHS to perform the incident investigation.

17.0 Revisions

Comment	Date
[Reserved]	
[Reserved]	
[Reserved]	
[Reserved]	
[Reserved]	
[Reserved]	
[Reserved]	
[Reserved]	
[Reserved]	
[Reserved]	
[Reserved]	
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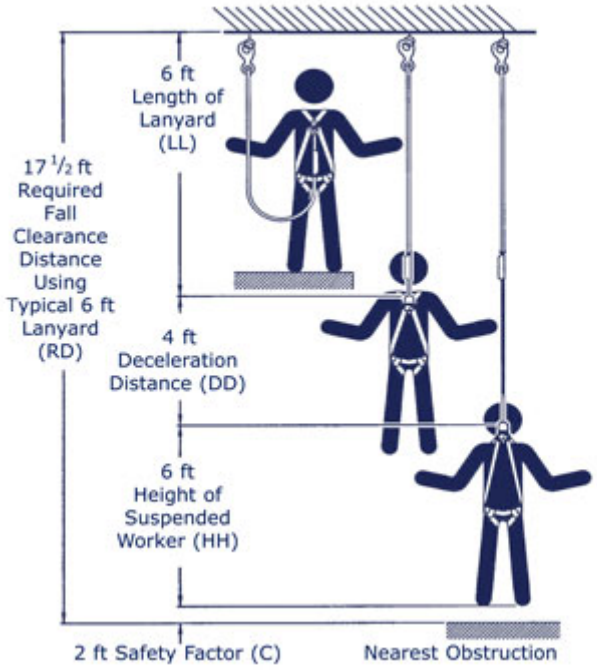
List of Appendices

APPENDIX A – Definitions

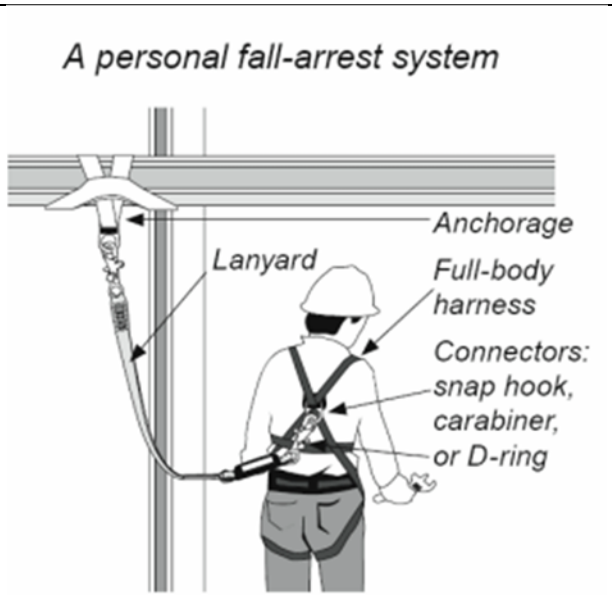
Anchorage- A secure point to attach a lifeline, lanyard, deceleration device or any other fall arrest, restraint, or rescue system. There are two types of anchorages: certified (engineered) and non-certified (improvised). Certified anchorages must be designed by a professional engineer. Non-certified anchorages are attached to suitably strong structures (beams, trusses, etc.) and approved by a competent person.	
Anchorage Connector- A component of subsystem that functions as an interface between the anchorages and fall protection, work positioning, rope access or rescue system for the purpose of coupling the system to the anchorage. This photo depicts a non-certified (improvised) anchorage. A tie-off adaptor attached to a steel beam.	

Body Belt – Body belts are not permitted for fall arrest. Body belts are only to be used for work positioning (when accompanied by a full body harness).	
Competent Person- An individual designated by the employer to be responsible for the immediate supervision, implementation, and monitoring of the employer's managed fall protection program who, through training and knowledge, is capable of identifying, evaluating, and addressing existing and potential fall hazards, and who has the employer's authority to take prompt corrective action with regard to such hazards.	

Connector- A device which is used to couple (connect) parts of the system together. It may be an independent component of the system (such as a carabineer), or an integral component of part of the system (such as a buckle or D-ring sewn into a full body harness, or a snap hook spliced or sewn to a lanyard or self-retracting lanyard.)	 
Corrosive Environment – An area that is located in a maritime environment (Marine Science Institute) or close to where corrosive chemicals or salts are being handled or discharged (CPE, WEL, NHB, MBB, Chilling Stations, etc.).	
Deceleration device- Any mechanism, such as rope grab, rip-stitch lanyard, specially woven lanyard, tearing or deforming lanyard, or automatic self-retracting-lifeline/lanyard, which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise	

limits the energy imposed on an employee during fall arrest.	
Deceleration distance- The additional vertical distance a falling user travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of a user's body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the user comes to a full stop.	
Department Safety Contact- Some departments prefer a single contact person who interfaces with EHS. For those departments that do not have a Department Safety Professional and do not want to assign a Department Safety Contact, contact EHS directly.	

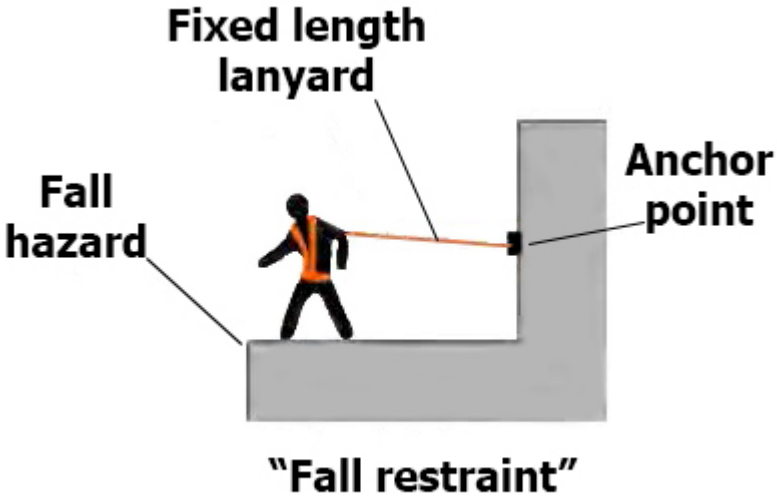
Department Safety Professional- Some departments have assigned full time safety professionals such as Division of Housing and Food, McDonald Observatory, Facilities Services & Utilities and Energy Management, etc. These professionals oversee safety programs within their respective departments.	
D-ring- An integral "D" shaped connector typically used in harnesses, lanyards, energy absorbers, lifelines and anchorages connectors as an integral connector as an attachment point.	 
Energy (Shock) Absorber- A component whose primary is to dissipate energy and limit deceleration forces which the system imposes on the body during fall arrest.	
Fall Arrest- The action or event of stopping a free fall or the instant where the downward free fall has been stopped.	

Fall Arrest System- The collection of equipment components that are configured to arrest a free fall.	
Fall Protection-Any equipment, device or system that prevents an accidental fall from elevation or that mitigates the effect of such a fall.	
Fall Protection System-Any secondary system that prevents workers from falling or, if a fall occurs, stops the fall.	

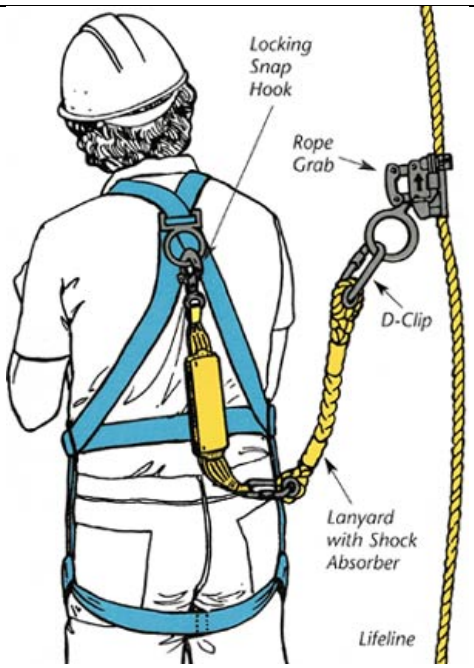
Free Fall- The act of falling before the personal fall arrest system begins to apply force to stop the fall.	
Friction Belt – A buckle that uses friction or pressure to hold the webbing in position, these friction type / slip buckles do not separate into two pieces.	
Guardrail System- A passive system of horizontal rails and vertical posts that prevent a person from reaching an unprotected edge.	

Harness, Full Body- A body support designed to contain the torso and distribute the fall arrest forces over at least the upper thighs, pelvis, chest and shoulders.	
Horizontal Lifeline- A component of a horizontal lifeline subsystem, consisting of a flexible line with connectors or other coupling means at both ends for securing it horizontally between two anchorages or anchorage connectors.	
Inspection- An examination of equipment or systems to assess conformance to a particular standard.	

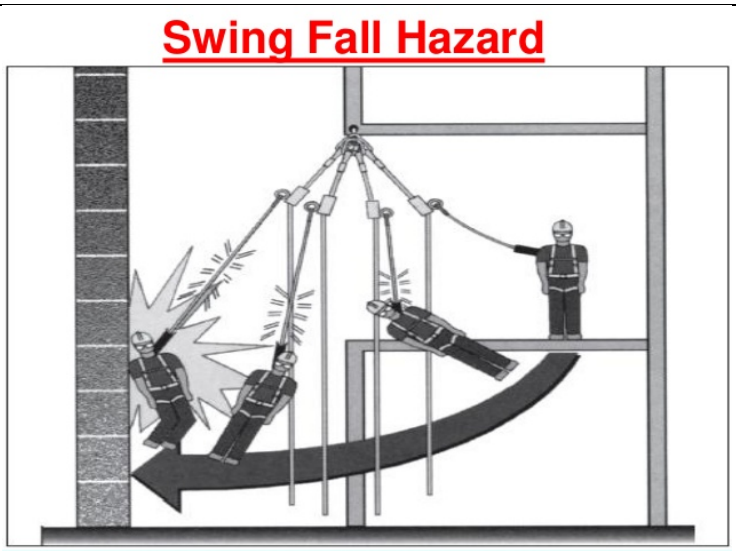
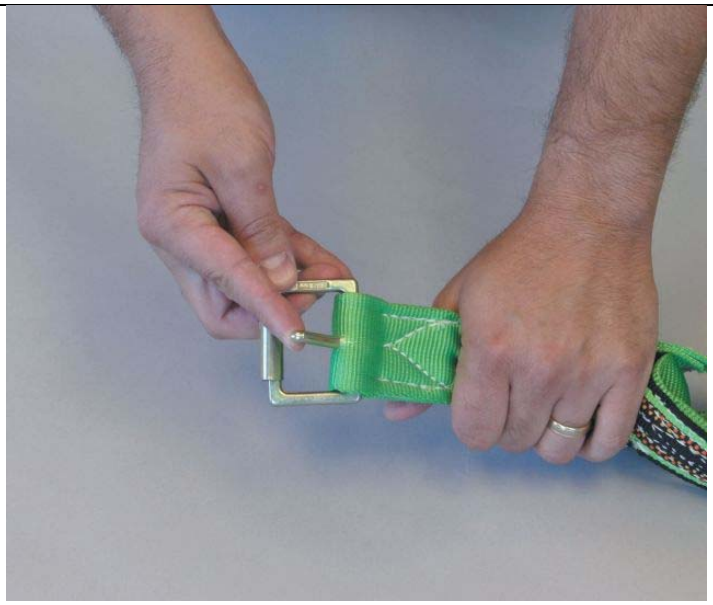
Lanyard- A component consisting of flexible rope, wire rope or strap, which typically has a connector at each end for connecting to the body support and to a fall arrester, energy absorber, anchorage connector or anchorage.	
Lifeline- A component of a fall protection system consisting of a flexible line designed to hang either vertically (vertical lifeline), or for connection to anchorages or anchorages connectors at both ends to span horizontally (horizontal lifeline).	

Passive Fall Protection System- Fall protection that does not require the wearing or use of personal fall protection equipment.	
Personal Fall Arrest System- A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, and body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.	
Personal Fall Restraint System- A fall restraint system consists of the equipment used to keep an employee from reaching a fall point, such as the edge of a roof or the edge of an elevated working surface.	

Qualified Person- A person with a recognized degree or professional certificate and with extensive knowledge, training, and experience in the fall protection and rescue field who is capable of designing, analyzing, evaluating and specifying fall protection and rescue systems to the extent required by these standards.	
Rescue Plan- A written process that describes in a general manner how retrieval or personnel recovery is to be approached under the specified parameters, such as location or circumstances.	
Rip-Stitch Impact Indicator - A rip-stitch impact indicator reveals an inner warning label when the lanyard has been subjected to a fall.	

Rope Grab (Fall Arrester) - A device that travels on a lifeline and will automatically engage or lock to arrest a free fall.	 
Self-Retracting lifeline (SRL)- A self-retracting device suitable for applications where during use the device is mounted or anchored such that possible free fall is limited to 2 feet (.6m) or less.	 

Snap hook- A connector with a hook-shaped body that has an opening for attachment to a fall protection of rescue component and a self-closing gate to retain the component within the opening.	 
Student - Anyone enrolled at the University for undergraduate, graduate, or part-time studies who is not paid a salary.	
Suspension Trauma- Also known as harness hang syndrome (HHS), or orthostatic intolerance, is an effect which occurs when the human body is held upright without any movement for a period of time. If the person is strapped into a harness or tied to an upright object they will eventually suffer the central ischemic response (commonly known as fainting). If one faints but remains vertical, one risks death due to the brain not receiving the oxygen it requires.	

Swing Fall-A pendulum-like motion that occurs during and/or after a vertical fall. A swing fall results when trained user begins a fall from a position that is located horizontally away from a fixed anchorage.	
Tongue Buckle - The tongue buckle works by inserting the loose strap of webbing through the buckle placing the tongue through the appropriate grommet hole. Push remaining webbing through the keeper.	

Unprotected Edge- Sometimes referred to leading edge. A wall less than 42, plus or minus 3 inches, or an opening in a wall greater than 30 inches tall and 18 inches wide.	
Vertical Lifeline- A component, element or constituent of a lifeline subsystem consisting of a vertically suspended flexible line and along which a fall arrester travels.	
Vertical Lifeline Subsystem- An assembly, including the necessary connectors, comprised of a vertical lifeline component and, optionally, an energy absorber and a lifeline tensioner component.	

Webbing- A narrow woven fabric with selvedge edges and continuous filament yarns made from light and heat resistant fibers that may be incorporated in a harness, lanyard, or other component or subsystem.	
Wrist Harness (Wristlets) – Designed for work inside of a confined space, where a full body harness would be restrictive for work purposes.	

APPENDIX B – Resources

Handbook of Operating Procedures 8-1020 – Environmental Health and Safety Policy
https://www.policies.utexas.edu/policies/environmental-health-and-safety-policy

Guardrail systems OSHA requirement
https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=10758&p_table=STANDARDS

29 CFR Code Regulations 1910--OSHA
https://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1910

https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9715

OSHA anchorage points testing
https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9730

Anchorage Points
https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10925

Guardrail systems
https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10924

American National Standards Institute (ANSI)
http://webstore.ansi.org/safety_standards/

Journal of Emergency Medical Services William Raynovich, NREMT-P, EDD August 2009 issue
http://www.jems.com/article/patient-care/dangerous-suspension-understan

IBC International Building Code – Guardrail openings
http://publicecodes.cyberregs.com/icod/ibc/2012/icod_ibc_2012_10_par198.htm

University of Berkeley Fall Protection Plan
http://www.ehs.berkeley.edu/sites/default/files/lines-of-services/workplace-safety/FallProtectionProgram.pdf

OSHA Fall Protection Inspection and Maintenance
https://www.osha.gov/Region7/fallprotection/fall_protection_info.html

APPENDIX C – Visual Inspection Form for Guardrails and Anchor Points

Name: _____ Date: _____

Location: _____

Guardrails

Prior to using a guardrail as passive fall protection the user will perform a visual inspection. The visual inspection will note deformation or wear that could reduce the guardrails designed capacity or effectiveness

YES NO Connections and components are free of corrosion, damage, or excessive play.
YES NO Connections and components are free of deformation, cracks, or damage.
YES NO Gates at ladders or similar unprotected edges operate smoothly with one hand.
YES NO Spring closures fully close and secure the gates.
YES NO Removable railings are free of excessive play at the connections.
YES NO Pins and removable components are in place.
YES NO Removable components like pins are tethered to prevent them from being lost.

If the visual inspection notes potential problems, the user should immediately stop and notify Facilities Operations Maintenance, who will be responsible for evaluation of the issue and repairs, if needed.

Anchor Points

Anchor points must be load tested upon installation. Anchorage systems must be inspected by a qualified person after a fall, following any major alteration to existing equipment, or annually if they are in a corrosive environment, as defined in Appendix A. Load testing is required initially when design documents are not available. Follow all manufacturers' recommendations for care and inspection. Anchor points that are used on a regular basis will be inspected by FOM's designated vendor every two years, a qualified person, if they are used on a frequent basis. All users should perform a visual inspection prior to clipping in and should look for the following items:

YES NO The anchor point is securely in place.
YES NO The anchor point is free of corrosion or other signs of wear.
YES NO The anchor point is free of cracks, deformation, or other signs of damage.

Should any deficiencies be noted, the anchor point must be tagged as 'Out of Service'. It must not be used until it can be tested by a qualified person. If the anchor point is removed from service the tag must state the name of the individual and contact number who tagged it. Anchor points that are not used regularly may be tagged out and must not be used until FOM's designated vendor performs an inspection.

APPENDIX D – Fall Assessment Evaluation Form

Fall Protection Plan
Appendix D – Fall Assessment Evaluation Form

Each department is responsible for assessing the potential fall hazards in their area. Below is a list of questions that will help you perform a hazard assessment for your area. Contact your supervisor or Facilities Operations Maintenance if deficiencies are noted. This assessment must be completed for each area initially and then annually or when conditions change.

Name: _____ Date: _____

Assessment Area: _____

YES NO Can I work safely from the ground by bringing the work down?

YES NO Can I work safely using a ladder?

YES NO Provided that I have received the proper training, can I use an aerial lift?

YES NO Are there guardrails in place?

YES NO Can I use portable guardrails?

YES NO Will my activities present a hazard for those below?

YES NO Are there any unstable, uneven, slippery walking/working surfaces?

YES NO Are there any unguarded wall openings?

YES NO Will I be performing work that will make the use of guardrails ineffective (i.e. working in raised vegetation beds)?

If personal fall protection equipment is necessary and you have received the proper training, address all the questions below before beginning work:

YES NO Are there existing anchor points that can be used?

YES NO Is the anchor point in service?

YES NO Does anchor point have an EQID?

YES NO If not, can pre-fabricated or engineered anchor points be installed?

YES NO Do I have all the right equipment for the job at hand (such as full body harness, connecting hardware, lanyard, etc.)?

YES NO Are all the pieces of my personal fall protection equipment in good working order?

YES NO Will I exceed manufacturer's specifications once I have added the weight of all tools?

YES NO If a fall arrest system is used, do I have clearance for the entire distance I may fall?

YES NO If using fall restraint, is my lanyard a length so I cannot go over the edge?

YES NO If using fall arrest, have I completed the Rescue Plan (Appendix H)?

APPENDIX E – Personal Fall Protection Training Form

Personal Fall Protection Training Form

Supervisor: _____ EID: _____
Department: _____

The University requires documentation that all personal fall protection users have received hands-on training. This training is provided by your supervisor or their designee.

It is the supervisor's responsibility to ensure all employees and students are trained. This training must be provided initially and:

- Whenever there is a near miss, accident, they do not work safely.
- Whenever a new piece of personal fall protection equipment is received and requires training.

This training is required initially and then every two years.

Review the following:	Yes	No	Not Applicable
General	**Y**	**N**	**N/A**
1. How to put on personal fall protection equipment			
2. How to properly fit personal fall protection equipment			
Personal Protective Equipment	**Y**	**N**	**N/A**
3. How to properly inspect personal fall protection equipment			
4. How to properly maintain personal fall protection equipment			
5. How to properly clean personal fall protection equipment			
6. How to properly store personal fall protection equipment			
Emergency Procedures	**Y**	**N**	**N/A**
7. How will rescue or retrieval occur			
8. Who will contact Austin Fire Department (AFD)			
9. Specific verbiage when calling AFD "I need the fire department's special operations team for a technical rope rescue."			
10. Contact Facilities Services at 512-471-2020 to have anchor inspected after a fall.			

Personal Fall Protection Training Form

Certification

In accordance with the University Fall Protection Program, the individuals listed below have hands-on training session covering the topics in this training checklist.

Name	EID	Title

I certify that the topics indicated on this training checklist were covered (as applicable) in this training session.

Instructor: _____ **EID: _____**

Date of Training: _____ **Location of Training: _____**

APPENDIX F – Cleaning of Fall Protection Equipment

Basic care of all safety equipment will prolong the durable life of the unit and will contribute toward the performance of its vital safety function. Proper storage and maintenance after use are as important as cleansing the equipment of dirt, corrosives, or contaminants. Storage areas should be clean, dry, and free of exposure to dust, fumes, or corrosive elements.

Nylon or Polyester – Remove all surface dirt with a sponge dampened in plain water. Squeeze the sponge dry. Dip the sponge in a mild solution of water and commercial soap or detergent. Work up a thick lather with a vigorous back and forth motion; then wipe with a clean cloth. Hang freely to dry, but away from excessive heat and direct prolonged sunlight.

Equipment Housings – Periodically clean the unit using a damp cloth and mild detergent; towel dry.

Drying – Equipment should dry thoroughly without close exposure to heat, steam, or long periods of sunlight.

APPENDIX G – Inspection of Personal Fall Protection Equipment

Visual inspection before each use must occur of all components in a fall protection system. In addition, an annual inspection by a competent person, or their designee, must occur. To maintain their service life and high performance, all full body harnesses should be inspected frequently. If any of the conditions listed below are found the equipment should be replaced before being used.

Harness Inspection

1. Webbing and Rings: For harness inspections begin at one end, hold the body side of the webbing toward you, grasping the webbing with your hands six to eight inches apart. Bend the webbing in an inverted "U." Watch for frayed edges, broken fibers, pulled stitches, cuts or chemical damage. Check D-rings and D-ring metal wear pads for distortion, cracks, breaks, and rough or sharp edges. The D-ring bar should be at a 90 degree angle with the long axis of the webbing and should pivot freely.

Attachments of buckles and D-rings should be given special attention. Note any unusual wear, frayed or cut fibers, or distortion of the buckles. Rivets should be tight and unremovable with fingers. Body side rivet base and outside rivets should be flat against the material. Bent rivets will fail under stress.

Inspect frayed or broken strands. Broken webbing strands generally appear as tufts on the webbing surface. Any broken, cut or burnt stitches will be readily seen.

2. Tongue Buckle: Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Rollers should turn freely on the frame. Check for distortion or sharp edges.

3. Friction Buckle: Inspect the buckle for distortion. The outer bar or center bars must be straight. Pay special attention to corners and attachment points of the center bar.

Lanyard Inspection

When inspecting lanyards, begin at one end and work to the opposite end. Slowly rotate the lanyard so that the entire circumference is checked. Spliced ends require particular attention. Hardware should be examined under procedures detailed below.

Hardware

Snaps: Inspect closely for hook and eye distortion, cracks, corrosion, or pitted surfaces. The keeper or latch should seat into the nose without binding and should not be distorted or obstructed. The keeper spring should exert sufficient force to firmly close the keeper. Keeper rocks must provide the keeper from opening when the keeper closes.

Lanyards

Steel Lanyards: While rotating a steel lanyard, watch for cuts, frayed areas, or unusual wear patterns on the wire. The use of steel lanyards for fall protection without a shock-absorbing device is not allowed.

Web Lanyard: While bending webbing in an inverted “U”, observe each side of the webbed lanyard. This will reveal any cuts or breaks. Due to the limited elasticity of the web lanyard, fall protection without the use of a shock absorber is not allowed.

Rope Lanyard: Rotation of the rope lanyard while inspecting from end to end will bring to light any fuzzy, worn, broken or cut fibers. Weakened areas from extreme loads will appear as a noticeable change in original diameter. The rope diameter should be uniform throughout, following a short break-in period. When a rope lanyard is used for fall protection, a shock-absorbing system should be included.

Shock-Absorbing Packs (Deceleration Device)

The outer portion of the shock-absorbing pack should be examined for burn holes and tears. Stitching on

areas where the pack is sewn to the D-ring, webbing or lanyard should be examined for loose strands, rips and deterioration.

Visual Indication of Damage to Webbing and Rope Lanyards

Heat
In excessive heat, nylon becomes brittle and has a shriveled brownish appearance. Fibers will break when flexed and should not be used above 180 degrees Fahrenheit.

Chemical
Change in color usually appears as a brownish smear or smudge. Transverse cracks appear when webbing is bent over tight. This causes a loss of elasticity in the webbing.

Ultraviolet Rays
Do not store webbing and rope lanyards in direct sunlight, because ultraviolet rays can reduce the strength of some material.

Molten Metal or Flame
Webbing and rope strands may be fused together by molten metal or flame. Watch for hard, shiny spots or a hard and brittle feel. Webbing will not support combustion, nylon will.

Paint and Solvents
Paint will penetrate and dry, restricting movements of fibers. Drying agents and solvents in some paints will appear as chemical damage.

APPENDIX H –Rescue Plan

Fall Protection Plan
Appendix H – Rescue Plan

A rescue plan must be completed for every time that personal fall protection, **fall arrest**, is used. Include the name(s) of all user(s) who will be performing work while wearing **fall arrest** equipment. An attendant is required at all times. The attendant must remain in direct contact with the user(s). The attendant must be familiar with the dangers of suspension trauma and have immediate access to medical emergency services. Any deviation must obtain prior approval from their supervisor. Contact Facilities Operations Maintenance if a fall occurs to have the anchor point inspected.

Date: _____ Building Name and Room Number: _____

Name of User(s): _____

Name of Attendant(s):

_____

Will the attendant use a cell phone or land line to contact emergency services, and where is it located?

_____

What rescue equipment is immediately available in the event of a fall?

_____

_____

Describe obstacles and obstructions that would hinder rescue operations in the event of a fall.

_____

_____

How will prompt rescue occur?

_____

_____

Are trauma straps present on the personal fall protection equipment being used? _____

UT Austin campus should use the Austin Fire Department for rescue. AFD has a High Angle Rescue Team that can be dispatched when requested. Use the following statement when contacting AFD for rescue:

"REQUESTING FIRE DEPARTMENT SPECIAL OPERATIONS TEAM FOR TECHNICAL ROPE RESCUE"

Will the local fire department be the primary rescue plan? _____

Local Fire Department Telephone Number: _____

How will the safety of the rescuers be assured as well as the suspended worker?

_____

_____

APPENDIX I – Suspension Trauma Information

U.S Department of Labor
Occupational Safety and Health Administration
Directorate of Science, Technology and Medicine
Office of Science and Technology Assessment

Suspension Trauma/ Orthostatic Intolerance

Safety and Health Information Bulletin

SHIB 03-24-2004, updated 2011

Purpose

This Safety and Health Information Bulletin provides employees and employers with important information about the hazards of orthostatic intolerance and suspension trauma when using fall arrest systems. This bulletin:

- describes the signs and symptoms of orthostatic intolerance;
- discusses how orthostatic intolerance can occur while workers are suspended following a fall; and
- outlines recommendations for preventing orthostatic intolerance, as well as recommendations for worker training and rescue.

Background

Orthostatic intolerance may be defined as "the development of symptoms such as light-headedness, palpitations, tremulousness, poor concentration, fatigue, nausea, dizziness, headache, sweating, weakness and occasionally fainting during upright standing" [1,2]. While in a sedentary position, blood can accumulate in the veins, which is commonly called "venous pooling," and cause orthostatic intolerance [3]. Orthostatic intolerance also can occur when an individual moves suddenly after being sedentary for a long time. For example, a person may experience orthostatic intolerance when they stand up quickly after sitting still for a long time.

A well-known example of orthostatic intolerance is that of a soldier who faints while standing at attention for long period of time. The moment the soldier loses consciousness, he or she collapses into a horizontal position. With the legs, heart, and brain on the same level, blood is returned to the heart. Assuming no injuries are caused during the collapse, the individual will quickly regain consciousness and recovery is likely to be rapid.

Venous pooling typically occurs in the legs due to the force of gravity and a lack of movement. Some venous pooling occurs naturally when a person is standing. In the veins, blood normally is moved back to the heart through one-way valves using the normal muscular action associated with limb movement. If the legs are immobile, then these "muscle pumps" do not operate effectively, and blood can accumulate. Since veins can expand, a large volume of blood may accumulate in the veins.

An accumulation of blood in the legs reduces the amount of blood in circulation. The body reacts to this reduction by speeding up the heart rate and in an attempt to maintain sufficient blood flow to the brain. If the blood supply is significantly reduced, this reaction will not be effective. The body will abruptly slow the heart rate and blood pressure will diminish in the arteries. During severe venous pooling, the reduction in quantity and/or quality (oxygen content) of blood flowing to the brain causes fainting. This reduction also can have an effect on other vital organs, such as the kidneys [3]. The kidneys are very sensitive to blood oxygen, and renal failure can occur with excessive venous pooling. If these conditions continue, they potentially may be fatal [3].

Description of Hazard

Orthostatic intolerance may be experienced by workers using fall arrest systems. Following a fall, a worker may remain suspended in a harness. The sustained immobility may lead to a state of unconsciousness. Depending on the length of time the suspended worker is unconscious/immobile and the level of venous pooling, the resulting orthostatic intolerance may lead to death. While not common, such fatalities often are referred to as **"harness-induced pathology"** or **"suspension trauma."**

Signs & symptoms that may be observed in an individual who is approaching orthostatic intolerance:

Faintness	Nausea
Breathlessness	Dizziness
Sweating	Unusually Low Heart Rate
Paleness	Unusually Low Blood Pressure
Hot Flashes	"Greying" or Loss of Vision
Increased Heart Rate	

References: Seddon, Paul. Harness Suspension: review and evaluation of existing information. Health and Safety Executive. Research Report 451/2002. 104 pp.

Sheehan, Alan. Suspension Trauma. Training handout.

Factors that can affect the degree of risk of suspension trauma:

Inability to move legs	Hypothermia
Pain	Shock
Injuries during fall	Cardiovascular disease
Fatigue	Respiratory disease
Dehydration	Blood loss

References: Seddon, Paul. Harness Suspension: review and evaluation of existing information. Health and Safety Executive. Research Report 451/2002. 104 pp.

Sheehan, Alan. Suspension Trauma. Training handout

Unconscious/immobile workers suspended in their harness will not be able to move their legs and will not fall into a horizontal position, as they would if they fainted while standing. During the static upright position, venous pooling is likely to occur and cause orthostatic intolerance, especially if the suspended worker is left in place for some time. Venous pooling and orthostatic intolerance can be exacerbated by other circumstances related to the fall. For example, shock or the experience of the event that caused the fall, other injuries, the fit/positioning of the harness, the environmental conditions, and the worker's psychological state all may increase the onset and severity of the pooling and orthostatic intolerance [3,5]. Unless the worker is rescued promptly using established safe procedures, venous pooling and orthostatic intolerance could result in serious or fatal injury, as the brain, kidneys, and other organs are deprived of oxygen [3]. Recommended rescue procedures are outlined below in the ***Conclusions and Recommendations*** section.

Conclusions and Recommendations

Prolonged suspension from fall arrest systems can cause orthostatic intolerance, which, in turn, can result in serious physical injury, or potentially, death. Research indicates that suspension in a fall arrest device can result in unconsciousness, followed by

death, in less than 30 minutes [4]. To reduce the risk associated with prolonged suspension in fall arrest systems, employers should implement plans to prevent prolonged suspension in fall protection devices. The plan should include procedures for: preventing prolonged suspension, identifying orthostatic intolerance signs and symptoms, and performing rescue and treatment as quickly as possible.

OSHA recommends the following general practices/considerations:

- Rescue suspended workers as quickly as possible.
- Be aware that suspended workers are at risk of orthostatic intolerance and suspension trauma.
- Be aware of signs and symptoms of orthostatic intolerance.
- Be aware that orthostatic intolerance is potentially life threatening. Suspended workers with head injuries or who are unconscious are particularly at risk.
- Be aware of factors that can increase the risk of suspension trauma.

Training

OSHA requires employers to train workers to use fall arrest systems and other personal protective equipment correctly while performing their jobs, in accordance with standards 29 CFR 1910.132 (Personal Protective Equipment) 29 CFR 1915.159 (Personal Fall Arrest Systems) and 29 CFR 1926.503 (Training Requirements for Fall Protection).

Workers who wear fall arrest devices while working, and those who may perform rescue activities, should also be trained in:

- How to ascertain whether their personal protective equipment is properly fitted and worn, so that it performs as intended;
- How orthostatic intolerance/suspension trauma may occur;
- The factors that may increase a worker's risk;
- How to recognize the signs and symptoms identified in this bulletin; and
- The appropriate rescue procedures and methods to diminish risk while suspended.

Rescue Procedures

Under 29 CFR 1926.502 (d) (Fall Protection Systems Criteria and Practices), OSHA requires that employers provide for "prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves." This should include identifying rescue procedures that address the potential for orthostatic intolerance and suspension trauma. Rescue procedures also should address how the rescued worker will be handled to avoid any post-rescue injuries.

Rescue procedures should include the following contingency based actions:

- If self-rescue is impossible, or if rescue cannot be performed promptly, the worker should be trained to "pump" his/her legs frequently to activate the muscles and reduce the risk of venous pooling. Footholds can be used to alleviate pressure, delay symptoms, and provide support for "muscle pumping."
- Continous monitoring of the suspended worker for signs and symptoms of orthostatic intolerance and suspension trauma.
- Ensuring that a worker receives standard trauma resuscitation[1] once rescued.
- If the worker is unconscious, keeping the worker's air passages open and obtain first aid.
- Monitoring the worker after rescue, and ensuring that the worker is evaluated by a health-care professional. The worker should be hospitalized when appropriate. Possible delayed effects, such as kidney failure, which is not unusual in these cases, are difficult to assess on the scene.

References

1. Robertson, David. Orthostatic Intolerance. Vanderbilt University, Nashville, Tennessee.

2. New York Medical College. Orthostatic Intolerance. Vahalla, New York.

3. Seddon, Paul. Harness Suspension: Review and evaluation of existing information. Health and Safety Executive. Research Report 451/2002. 104 pp.

4. Sheehan, Alan. Suspension Trauma. Training handout.

5. Weems, Bill and Bishop, Phil. Will Your Safety Harness Kill You? *Occupational Health & Safety*. 72(3): 86-88, 90, March, 2003.

[1] National Association of Emergency Medical Technicians (NAEMT). Provider Textbook section in: **PHTLS Basic and Advanced Prehospital Trauma Life Support *Fifth Edition*** St. Louis, MO: Mosby; 2003: Section 1. Summary available at: http://phtls.org/datafiles/PHTLS%205ed%20Compendium.pdf

APPENDIX J – Roof Access Rules

Roof Access Rules

1. Do not access the roof unless you have legitimate maintenance, service, or academic reasons.
2. Only authorized personnel are allowed roof access.
3. Staff and faculty must obtain authorization from their supervisor or the building manager.
4. Contractors must obtain authorization from their UT contact.
5. Students must have permission from authorized staff, their instructor, or faculty sponsor prior to roof access.
6. Undergraduate students and the general public are prohibited from accessing roofs with a wall or guard rail less than 39 inches high (leading edge), without prior written EHS approval. Student workers are considered staff and must have equivalent training and follow all the procedures as full time staff.
7. Undergraduate students on a roof must obtain prior permission from staff/faculty or be accompanied **at all times** by a staff or faculty member. This does not apply to elevated platforms that are designed for continuous occupancy, such as patios and terraces similar to those found at SAC, PAT, RLM, and KIN.
8. Follow all signage and roof-specific rules prior to and during roof access.
9. Use designated pathways, if present.
10. Notify UTPD when conducting work outside normal business hours (7AM-6PM).
11. Only authorized staff and faculty performing emergency maintenance may access roof during severe weather conditions.

APPENDIX K – Rules for Working Safely on a Roof

Rules for Working Safely on a Roof

1. Follow all posted instructions, policies, and roof-specific rules.
2. Students and the general public are prohibited from accessing roofs with a wall or guard rail less than 39 inches high (leading edge), without prior written EHS approval.
3. Do not go within 15 feet of the edge of a roof (leading edge) or a wall opening (at least 18" wide by 30" tall), unless you have the authorization, training, and personal protective equipment to do so.
4. Follow all instructions from authorized faculty/staff or you may be subject to removal from roof and/or disciplinary action.
5. For staff and faculty only: if severe weather threatens, exit roof unless authorized to remain. **Students and the general public are never authorized on roofs during severe weather.**
6. Notify UTPD at 512-471-4441 of unauthorized people on roofs.
7. Secure unused tools on the roof and remove them when job is completed.
8. Students, faculty, and the general public must leave the roof if dangerous conditions arise.
9. No horseplay or running on the roof, only legitimate University activities are permitted.
10. Do not throw any object off roofs (unless you obtain prior written authorization from EHS).

The University is undergoing a comprehensive project to determine and implement fall protection methods on University roofs. It will take several years to complete this project. During this transition period it may not always be possible to comply with all the parts of rule #3. However, it is the responsibility of supervisors/managers to take the necessary precautions to protect their employees.

APPENDIX L – Load Requirements for Fall Protection Components

Guardrails

Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied within 2 inches of the top edge, in any outward or downward direction, at any point along the top edge. When the 200 pound test load is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches above the walking/working level.

Mid-rails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds applied in any downward or outward direction at any point along the mid-rail or other member.

Guardrail systems shall be of a smooth surfaced material to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

The ends of all top rails and mid-rails shall not overhang the terminal posts, except where overhang does not constitute a projection hazard.

Steel banding and plastic banding shall not be used as top rails or mid-rails.

Top rails and mid-rails shall be at least one-quarter inch nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall be flagged at no more than 6-foot intervals with a high-visibility material.

For pipe railings: posts, top rails, and intermediate railings shall be at least one and one-half inches nominal diameter (schedule 40 pipe) with posts spaced not more than 8 feet apart on centers.

For structural steel railings: posts, top rails, and intermediate rails shall be at least 2-inch by 2-inch by 3/8-inch angles, with posts spaced not more than 8 feet apart on centers.

For areas where the general public may access the guard rail shall not have openings which allow passage of a sphere 4 inches in diameter from the walking surface to the required guard height as per the International Building Code 2012, section 1013.4

Hoist areas shall be protected by guardrail or personal fall arrest systems. If guardrail systems or portions of guardrail systems are removed to facilitate the hoisting process creating a potential fall hazard for the employee, that employee must be protected by a personal fall arrest system.

Loading docks more than 6 feet above a lower level are not required to have a guardrail system on the working side of the dock where it can be demonstrated that the presence of guardrails would prevent the performance of work. All non-working sides of a loading dock must be protected by a guardrail system.

Skylights

Skylight screens shall be of such construction and mounting that they are capable of withstanding a load of at least 200 pounds applied perpendicularly at any one area on the screen. They shall also be of such construction and mounting that under ordinary loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork with openings not more than 4 inches long or of slatwork with openings not more than 2 inches wide with length unrestricted. A plastic skylight which can provide the necessary structural integrity to support the 200-pound load would not be required to be further safeguarded, since it would meet the intended function of a screen as well.

APPENDIX M – Annual Inspection Forms

Annual Inspection Form

Full Body Harness

The University requires documentation of inspection annually on all fall protection equipment. All damaged equipment must be taken out of service until it is replaced or repaired. Contact your supervisor with questions or concerns regarding fall protection equipment.

Inspector Name and EID	Inspector Signature
Department	Inspection Date
Manufacturer and Equipment Name	In-Service Date
Manufacturer Model and Serial #	Manufacture Date

Pass ☐

Fail ☐

Y = Yes N = No N/A = Not Applicable

Impact Indicator	**Y**	**N**	**N/A**
1. Damaged	❑	❑	❑
2. Missing	❑	❑	❑
3. Deployed	❑	❑	❑
4. Reserve lifeline deployed if applicable	❑	❑	❑
Buckles	**Y**	**N**	**N/A**
5. Cracked	❑	❑	❑
6. Poor function	❑	❑	❑
7. Missing parts	❑	❑	❑
8. Corroded	❑	❑	❑
9. Burrs / sharp edges	❑	❑	❑
10. Bent / distorted	❑	❑	❑
11. Damaged	❑	❑	❑
Labels	**Y**	**N**	**N/A**
12. Present and attached	❑	❑	❑
13. Legible	❑	❑	❑
Plastic Keepers	**Y**	**N**	**N/A**
14. Missing	❑	❑	❑
15. Damaged	❑	❑	❑
D-Rings	**Y**	**N**	**N/A**
16. Cracked	❑	❑	❑
17. Welded	❑	❑	❑
18. Bent / distorted	❑	❑	❑
19. Corroded	❑	❑	❑
20. Sharp edges	❑	❑	❑

Annual Inspection Form

Full Body Harness

Connectors	**Y**	**N**	**N/A**
21. Cracked	❑	❑	❑
22. Sharp edges	❑	❑	❑
23. Missing parts	❑	❑	❑
24. Corroded	❑	❑	❑
25. Labelled / marked	❑	❑	❑
26. Bent / distorted	❑	❑	❑
27. Sticky gates	❑	❑	❑
28. Stays open / won't lock	❑	❑	❑
29. Excess dirt / grease	❑	❑	❑
30. Closes but doesn't lock	❑	❑	❑
31. Single action (no lock on gate)	❑	❑	❑
D-ring plate (back pad)	**Y**	**N**	**N/A**
32. Missing	❑	❑	❑
33. Damaged	❑	❑	❑
Stitching	**Y**	**N**	**N/A**
34. Cut	❑	❑	❑
35. Broken	❑	❑	❑
36. Pulled	❑	❑	❑
37. Missing stitch patterns	❑	❑	❑
38. Burned	❑	❑	❑
Webbing	**Y**	**N**	**N/A**
39. Cuts / tears / holes	❑	❑	❑
40. Burns	❑	❑	❑
41. Frays	❑	❑	❑
42. Knots	❑	❑	❑
43. UV damage	❑	❑	❑
44. Grease / grime	❑	❑	❑
45. Paint	❑	❑	❑
46. Discoloration	❑	❑	❑
47. Mold	❑	❑	❑
48. Missing / damaged stitch pattern	❑	❑	❑
49. Heat damage / glazing	❑	❑	❑
50. Permanent marking on load bearing webbing	❑	❑	❑
51. Abrasion	❑	❑	❑

Annual Inspection Form

Full Body Harness

Comments:

For more information, call (512) 471-3511 or see our Web site at http://www.utexas.edu/safety/ehs/.

Annual Inspection Form

Lanyards and Self-Retracting Lifelines

The University requires documentation of inspection annually on all fall protection equipment. All damaged equipment must be taken out of service until it is replaced or repaired. Contact your supervisor with questions or concerns regarding fall protection equipment.

Inspector Name and EID	Inspector Signature
Department	Inspection Date
Manufacturer and Equipment Name	In-Service Date
Manufacturer Model and Serial #	Manufacture Date

Pass ☐

Fail ☐

Y = Yes N = No N/A = Not Applicable

Housing	**Y**	**N**	**N/A**
1. Cracks / distortion	❑	❑	❑
2. Dents impeding operation	❑	❑	❑
3. Dirty / contaminated	❑	❑	❑
4. Missing parts / screws / bolts etc.	❑	❑	❑
Handle	**Y**	**N**	**N/A**
5. Damaged	❑	❑	❑
6. Bent / loose	❑	❑	❑
7. Missing parts / screws	❑	❑	❑
Impact Indicator (where applicable)	**Y**	**N**	**N/A**
8. Damaged	❑	❑	❑
9. Missing	❑	❑	❑
10. Deployed	❑	❑	❑
11. Reserve lifeline deployed if applicable	❑	❑	❑
Connectors	**Y**	**N**	**N/A**
12. Cracked	❑	❑	❑
13. Sharp edges	❑	❑	❑
14. Missing parts	❑	❑	❑
15. Corroded	❑	❑	❑
16. Labelled / marked	❑	❑	❑
17. Bent / distorted	❑	❑	❑
18. Sticky gates	❑	❑	❑
19. Stays open / won't lock	❑	❑	❑
20. Excess dirt / grease	❑	❑	❑
21. Closes but doesn't lock	❑	❑	❑
22. Single action (no lock on gate)	❑	❑	❑

Annual Inspection Form

Lanyards and Self-Retracting Lifelines

Labels	**Y**	**N**	**N/A**
23. Present and attached	❑	❑	❑
24. Legible	❑	❑	❑
Webbing	**Y**	**N**	**N/A**
25. Cuts / tears / holes	❑	❑	❑
26. Burns	❑	❑	❑
27. Frays	❑	❑	❑
28. Knots	❑	❑	❑
29. UV damage	❑	❑	❑
30. Grease / grime	❑	❑	❑
31. Paint	❑	❑	❑
32. Discoloration	❑	❑	❑
33. Mold	❑	❑	❑
34. Missing or damaged stitch patterns	❑	❑	❑
35. Permanent marking on load bearing webbing	❑	❑	❑
36. Heat damage / glazing	❑	❑	❑
37. Abrasions	❑	❑	❑
Wire Rope (Self Retracting Lifeline)	**Y**	**N**	**N/A**
38. Heat damage	❑	❑	❑
39. Kinked	❑	❑	❑
40. Missing / damaged thimble	❑	❑	❑
41. Loose termination	❑	❑	❑
42. Corrosion	❑	❑	❑
43. Distortion	❑	❑	❑
44. Broken wires	❑	❑	❑
45. Separation of strands	❑	❑	❑
46. Abraded wire	❑	❑	❑
47. Bird caging	❑	❑	❑
Shock Absorber	**Y**	**N**	**N/A**
48. Cuts / tears / abrasions	❑	❑	❑
49. Deployed / stretched / elongated	❑	❑	❑
50. Plastic cover missing	❑	❑	❑
51. Holes / burns	❑	❑	❑
52. UV damage / fading	❑	❑	❑
53. Excessive soiling	❑	❑	❑

Annual Inspection Form

Lanyards and Self-Retracting Lifelines

Rope (Lanyard)	**Y**	**N**	**N/A**
54. Splice loose / coming out	❑	❑	❑
55. Thimble loose / missing	❑	❑	❑
56. Inner core damage – voids	❑	❑	❑
57. Fraying	❑	❑	❑
58. Core showing through sheath	❑	❑	❑
59. Cuts / pulls in fibers	❑	❑	❑
60. Burns	❑	❑	❑
61. Knots	❑	❑	❑
62. Heat damage / glazing	❑	❑	❑
63. Bird caging	❑	❑	❑
64. Discoloration	❑	❑	❑
65. Dirt / grease	❑	❑	❑
66. Stretched / kinked	❑	❑	❑
67. Five full tucks on rope splice	❑	❑	❑
68. Paint / rust staining	❑	❑	❑

Comments:

For more information, call (512) 471-3511 or see our Web site at http://www.utexas.edu/safety/ehs/.

Annual Inspection Form

Rope Grabs, Vertical Lifelines, Temporary Horizontal Lifelines

The University requires documentation of inspection annually on all fall protection equipment. All damaged equipment must be taken out of service until it is replaced or repaired. Contact your supervisor with questions or concerns regarding fall protection equipment.

_____ Inspector Name and EID	_____ Inspector Signature
_____ Department	_____ Inspection Date
_____ Manufacturer and Equipment Name	_____ In-Service Date
_____ Manufacturer Model and Serial #	_____ Manufacture Date

Pass ☐

Fail ☐

Y = Yes N = No N/A = Not Applicable

Type 1 General	**Y**	**N**	**N/A**
1. Vertical lifeline matches rope grab as per manufacturer	❑	❑	❑
2. "Up" arrow legible	❑	❑	❑
3. Springs operating correctly	❑	❑	❑
4. Corrosion	❑	❑	❑
5. Burns / cracks / sharp edges	❑	❑	❑
6. Unusual discoloration	❑	❑	❑
7. Deformation	❑	❑	❑
8. Connectors functioning properly	❑	❑	❑
Manual Device	**Y**	**N**	**N/A**
9. Unit is locked onto rope	❑	❑	❑
10. Does not move unless opened	❑	❑	❑
11. Unit operates without restriction	❑	❑	❑
Automatic Device	**Y**	**N**	**N/A**
12. Damaged	❑	❑	❑
13. Operates without restriction	❑	❑	❑
14. Locks onto rope properly and cleanly	❑	❑	❑
15. Internal wear	❑	❑	❑
16. Missing parts / screws	❑	❑	❑
17. All moving parts operate without restriction	❑	❑	❑
Rivets, Bolts and Rollers	**Y**	**N**	**N/A**
18. Corroded	❑	❑	❑
19. Missing	❑	❑	❑
20. Loose / bent	❑	❑	❑
21. Excess dirt / grease	❑	❑	❑

Annual Inspection Form

Rope Grabs, Vertical Lifelines, Temporary Horizontal Lifelines

Vertical and Horizontal Lifelines	**Y**	**N**	**N/A**
22. Screws, nuts, bolts, secure	❑	❑	❑
23. Thimbles held firm	❑	❑	❑
24. Covers free from cracks, dents	❑	❑	❑
25. Metal components corroded / rusting	❑	❑	❑
26. Broken impact indicator pin if applicable	❑	❑	❑
27. No substitutions or alterations	❑	❑	❑
Rope	**Y**	**N**	**N/A**
28. Splice loose / coming out	❑	❑	❑
29. Inner core damage - voids	❑	❑	❑
30. Frayed strands	❑	❑	❑
31. Core showing through sheath	❑	❑	❑
32. Cuts / pulls in fibers	❑	❑	❑
33. Burns	❑	❑	❑
34. Knots	❑	❑	❑
35. Heat damage / glazing	❑	❑	❑
36. Bird caging	❑	❑	❑
37. Discoloration	❑	❑	❑
38. Dirt / grease	❑	❑	❑
39. Stretched / kinked	❑	❑	❑
40. Five full tucks in rope splice/s	❑	❑	❑
41. Paint / rust staining	❑	❑	❑
Labels	**Y**	**N**	**N/A**
42. Legible	❑	❑	❑
43. Present and attached	❑	❑	❑
Wire Rope	**Y**	**N**	**N/A**
44. Heat damage	❑	❑	❑
45. Kinked	❑	❑	❑
46. Missing / damaged thimble	❑	❑	❑
47. Loose termination	❑	❑	❑
48. Corrosion / distortion	❑	❑	❑
49. Broken wires	❑	❑	❑
50. Separation of strands	❑	❑	❑
51. Abraded wires	❑	❑	❑
52. Bird caging	❑	❑	❑

Annual Inspection Form

Rope Grabs, Vertical Lifelines, Temporary Horizontal Lifelines

Shock Absorber	**Y**	**N**	**N/A**
53. Cuts / tears / abrasions	❑	❑	❑
54. Deployed / stretched / elongated	❑	❑	❑
55. Protective cover missing	❑	❑	❑
56. Holes / burns	❑	❑	❑
57. UV damage / fading	❑	❑	❑
58. Rust damage	❑	❑	❑
59. Corrosion	❑	❑	❑
60. Distortion	❑	❑	❑

Comments:

For more information, call (512) 471-3511 or see our Web site at http://www.utexas.edu/safety/ehs/.

APPENDIX N – Safety Signage Guidelines

All safety signs posted regarding fall protection may either comply with ANSI Z535.2-2011 Environmental and Facility Safety Signs or existing Project Management Construction Services (PMCS) guidance. These signs consist of two main parts: signal word panel and word message panel. A symbol panel can also be included, but is not required.

Signal words DANGER and CAUTION are used for specific situations. DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations. CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. The word message should be concise and readily understood.

Below the CAUTION and DANGER are existing University signs. They or the current ANSI Z535.2-2011 shall be used.

This CAUTION sign shall be placed on all permanent point(s) of access to any roof area. Consult with PMCS as to proper placement and attachment of signs.

The DANGER sign should be placed on the door leading out to the roof. Consult with PMCS as to proper placement and attachment of signs.

The letter height in the example signs above are not to scale. They are intended to show the layout and color requirements for DANGER and CAUTION signs.

The signal word height (DANGER and CAUTION) should be twice as large as the wording in the message panel. Message panel lettering should be a size that enables a person with normal vision, including corrected vision, to read the safety sign message panel text at a safe viewing distance from the hazard. A minimum safe viewing distance of 20 feet requires a minimum message word letter height of 0.80 inches for recommended reading conditions, see ANSI Z535.2-2011 for more details.